

### 3.1.5 BIOLOGICAL RESOURCES AND SOILS

The region of influence for biological resources and soils is the area that contains all potential surface disturbances that would result from the Proposed Action plus some additional area to evaluate local animal populations. This region is roughly equivalent to the analyzed land withdrawal area of about 600 square kilometers (230 square miles). DOE used available information and studies on plants and animals at the site of the proposed repository and the surrounding region to identify baseline conditions for biological resources. This information included land cover types, vegetation associations, and the distribution and abundance of plant and animal species in the region of influence (the analyzed land withdrawal area) and in the broader region. The plants and animals in the Yucca Mountain region are typical of species in the Mojave and Great Basin Deserts.

DOE has surveyed the region for naturally occurring wetlands and has studied soil characteristics (thicknesses, water-holding capacity, texture, and erosion hazard) in the region. This section summarizes this information and describes existing soil conditions in relation to potential contaminants. Unless otherwise noted, this information is from the *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999, all) or the *Environmental Baseline File for Soils* (DIRS 104592-CRWMS M&O 1999, all).

The State of Nevada (DIRS 148188-Loux 1997, all) expressed the view that there was no systematic integrated environmental program to characterize the unique and fragile desert environment at Yucca Mountain before 1982, when DOE began site investigation that may have caused irreversible alterations (DIRS 103298-Lemons and Malone 1989, pp. 435 to 441). However, the State acknowledged that after site investigations started and impacts might have occurred, DOE began studies of sensitive species, archaeology, airborne particulates, and groundwater (DIRS 103298-Lemons and Malone 1989, pp. 435 to 441), and established an environmental baseline from these data (DIRS 103396-Malone 1989, pp. 77 to 95). DIRS 103398-Malone (1995, pp. 271 to 284) contended that many of the studies conducted to establish the baseline and evaluate impacts, particularly those on plants and animals, were not adequately designed and did not use an integrated ecosystem approach and, therefore, were of little value for evaluating impacts of the repository.

DOE contends that studies initiated after the start of site investigations are suitable for establishing the baseline needed for this EIS. The purpose of studies of the impacts of site characterization activities on plants and animals was not to evaluate potential impacts from a repository, but rather to focus on the appropriate level of ecological organization for the types of impacts that occurred during characterization activities. DOE used the results of those studies in the EIS analysis to understand and predict possible impacts from similar activities that would occur during repository construction and operation (for example, habitat destruction).

#### 3.1.5.1 Biological Resources

##### 3.1.5.1.1 Vegetation

DOE adapted broad categories of land cover types for the analyzed land withdrawal area (based primarily on predominant vegetation; see Figure 3-21) from two sources: a statewide classification and a detailed, field-validated classification of the area surrounding the location of the proposed repository. Land cover types typical of the Mojave and Great Basin Deserts occur in the analyzed land withdrawal area; they include creosote-bursage (56 percent), blackbrush (14 percent), hopsage (13 percent), Mojave mixed scrub (10 percent), salt desert scrub (4 percent), sagebrush (3 percent), and pinyon-juniper (much less than 1 percent). None of the more than 210 plant species known to occur in the analyzed land withdrawal area is endemic to the area; that is, they all occur in other places.